



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/039,207	01/04/2002	Martin L. Plumer	S01.12-0846/STL 10285	2028

7590 03/05/2004

Brian D. Kaul
WESTMAN CHAMPLIN & KELLY
International Centre - Suite 1600
900 South Second Avenue
Minneapolis, MN 55402-3319

EXAMINER

EVANS, JEFFERSON A

ART UNIT	PAPER NUMBER
----------	--------------

2652

DATE MAILED: 03/05/2004

7

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/039,207

Applicant(s)

PLUMER ET AL.

Examiner

Jefferson Evans

Art Unit

2652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 3, 6, 9, 12-16, 19 and 21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 5, 7, 8, 10, 11, 17, 18, 20, 22, and 23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Claims 1 to 23 are pending.

Claims 3, 6, 9, 12-16, 19, and 21 have been withdrawn from further consideration.

Drawings

1. The drawings are objected to because the drawings do not adequately depict the nature of the flux flow in figures 4 and 5. The important issue is how the flux interacts with the magnetic medium and this is not clear from figures 4 and 5. It is also noted that an overall flux flow should be depicted to provide adequate understanding of how the invention operates and is distinguished from the prior art. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance. Applicant is reminded of the prohibition against the entry of new matter.

At the bottom of page 8 and the top of page 9 of the amendment filed 12-11-2003 applicant asserts that the drawings are adequate and request clarification of the Examiner's objection. The Examiner's position remains that the original disclosure, including the drawings do not adequately establish the nature of the flow of the magnetic flux for the writing element. Applicant asserts that the magnetic flow in the pole tip(s) is similar to that in the prior art where a return path would be present and that away from the pole tip(s) is allowed to freely disperse. However the original disclosure does not establish adequately in the specification or drawings how flux concentration is maintained to an adequate level in the region where the pole tip(s) are adjacent a medium, despite the free dispersal, how the

Art Unit: 2652

flux interacts with the medium, or why there is not some degree of flux return through a shield of the read element. For the longitudinal write embodiment, the fringe fields and their interaction with the medium require depiction.

Claim Rejections - 35 USC § 112

2. Claims 1, 2, 4, 5, 7, 8, 10, 11, 17, 18, 20, 22, and 23 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Figures 4 has one arrow showing flux flow and figure 5 has two arrows, however this is considered to be inadequate to establish the flux interaction between a read/write element of the invention and a magnetic medium, especially as the medium is not depicted in either figure 4 or 5. Also, the overall flux flow in the system is unclear as there is neither a depiction nor a description of the overall flow. Such information is needed to show how the inventive read/write head operates and avoids unwanted fringing effects or similar such potential problems. The flux is not conducted to a back gap via a return pole, but where does it go instead? How is flux prevented from interacting with the MR element shields in such a manner that one or both shields acts as a return path?

On pages 9 and 10 of the amendment filed 12-11-2003, applicant contends that the original disclosure is adequate and that the write heads of figures 4 and 5 operate similar to the prior art in the area of the pole tips as the flux is adequately

Art Unit: 2652

concentrated in that area and then without a return path the flux is free to disperse away from the pole tips.

The Examiners position remains that the original disclosure is inadequately descriptive. It is not clear why the free dispersal of the magnetic flux does not cause a drop-off in field intensity that would prevent the flux from interacting with the media in a fashion adequate for reliable write operations. The path of flux through the media is not adequately established. The specification states that a read head components are spaced a certain distance from the write head components but it is not established why that distance is adequate, nor below what threshold would magnetic flux returning through a shield of the read head need to be such that there can be considered to be no return path?

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 4, 5, 7, 10, 11, 17, 18, 22, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Tanaka et al (U.S. 6,128,166). Note figure 7. Tanaka discloses a single write pole 26 separated from a write coil 27 by an insulating material, and a MR element 24 between shield layers 23.

On the bottom of page 11 and the top of page 12 of the amendment filed 12-11-2003, applicant contends that Tanaka does not disclose a lack of a return path

Art Unit: 2652

and that structure in Tanaka, such as one of the read element shields, would likely act as a return path.

In response, the Examiner first notes that the claim language refers to "a return pole element" rather than the "a return path" (the phrase in the claim is considered a bit more limiting). Tanaka discloses the use of a single write pole and includes no disclosure in the specification or depiction in the figures that indicates any element of Tanaka would function as a return pole element, and even if some small amount of flux generated by the write pole were to pass through a shield of Tanaka's write element, it would be below a threshold where it could be considered to act as a "return pole element".

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2, 8, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al in view of Cohen et al (U.S. 5,703,740). Tanaka does not disclose a helical coil arrangement.

Cohen discloses a helical coil arrangement.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the coil of Tanaka et al take on a helical arrangement.

Art Unit: 2652

The motivation would have been: such a coil arrangement was an effective manner in which to provide an increased number of turns and to increase efficiency.

The Examiner's position remains that it would be obvious to apply a helical coil as taught by Cohen to Tanaka at the invention was made. Tanaka discloses a single write pole versus a pair of poles thus removing the ability to have turns go around a back area connecting the poles. Tanaka appears to provide a short side extension for the write coil to surround but one of ordinary skill would recognize that the number of turns and efficiency would still be limited and that a helical coil arrangement would be a effective means for overcome this limitation.

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jefferson Evans whose telephone number is 703-308-1610. The examiner can normally be reached on Monday to Friday, 9:00am to 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Nguyen can be reached on 703-305-9687. The fax

Application/Control Number: 10/039,207

Page 7

Art Unit: 2652

phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

A handwritten signature in black ink, appearing to read 'JEFFERSON EVANS', with a stylized, cursive script.

JAE
March 3, 2004

Jefferson Evans
Primary Examiner
Art Unit 2652

**JEFFERSON EVANS
PRIMARY EXAMINER**